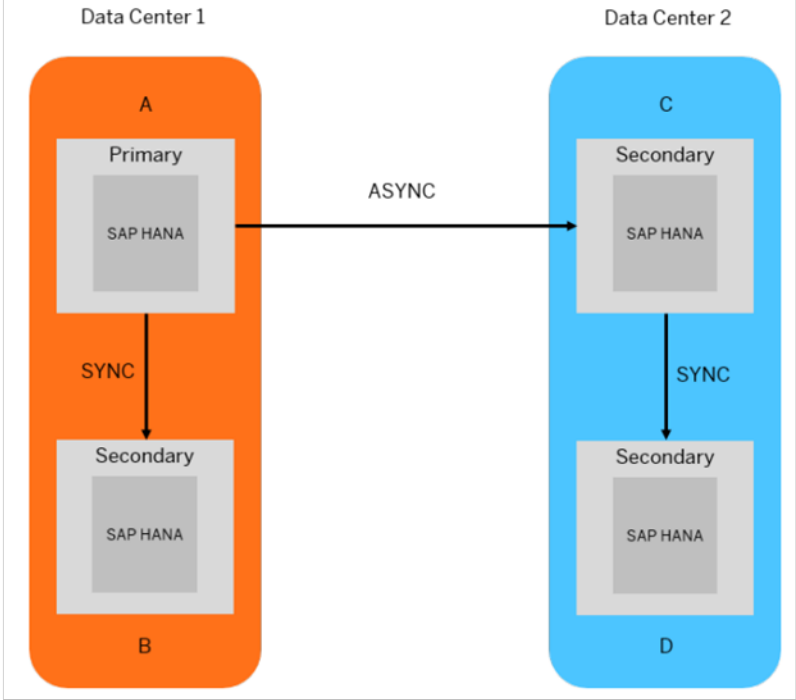


EXHIBIT 10

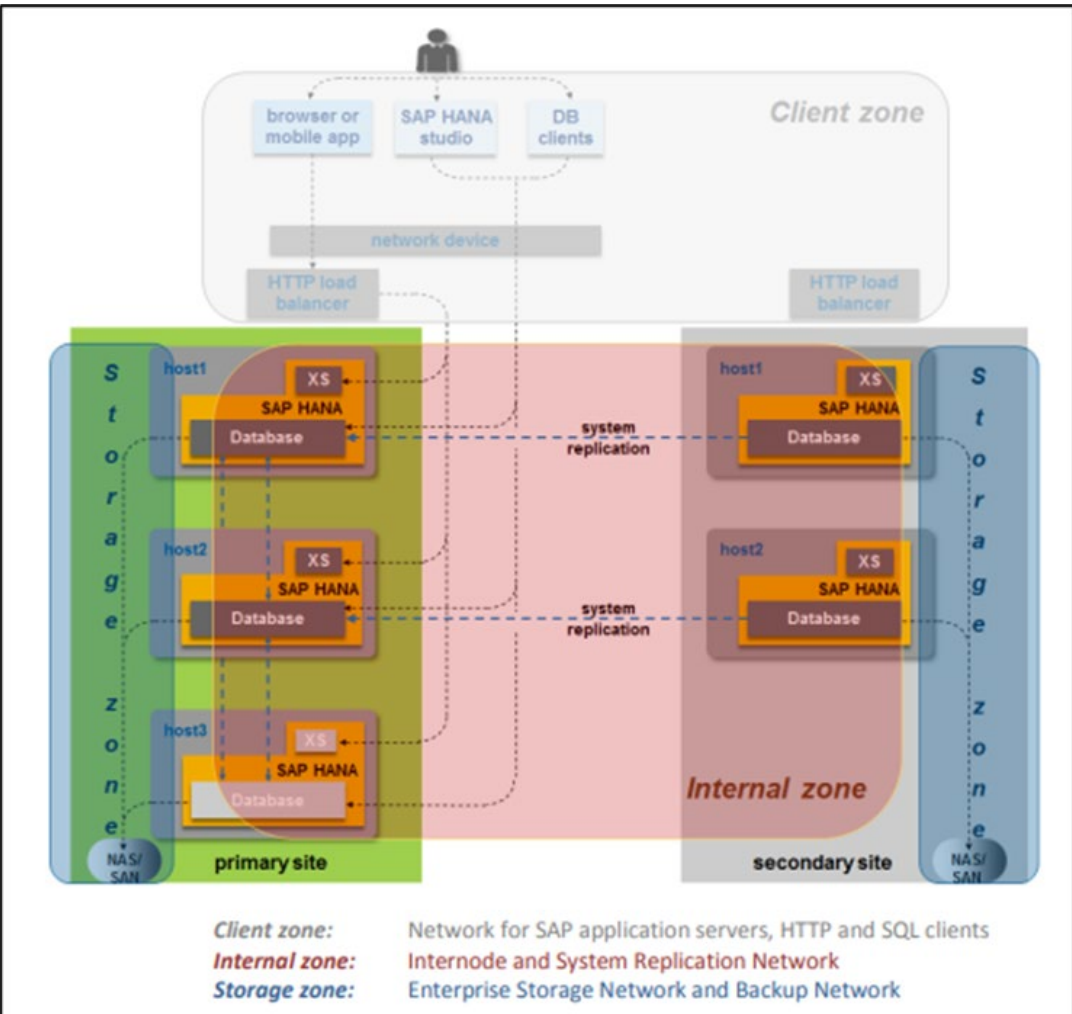
Exhibit 10: U.S. Patent No. 7,152,182

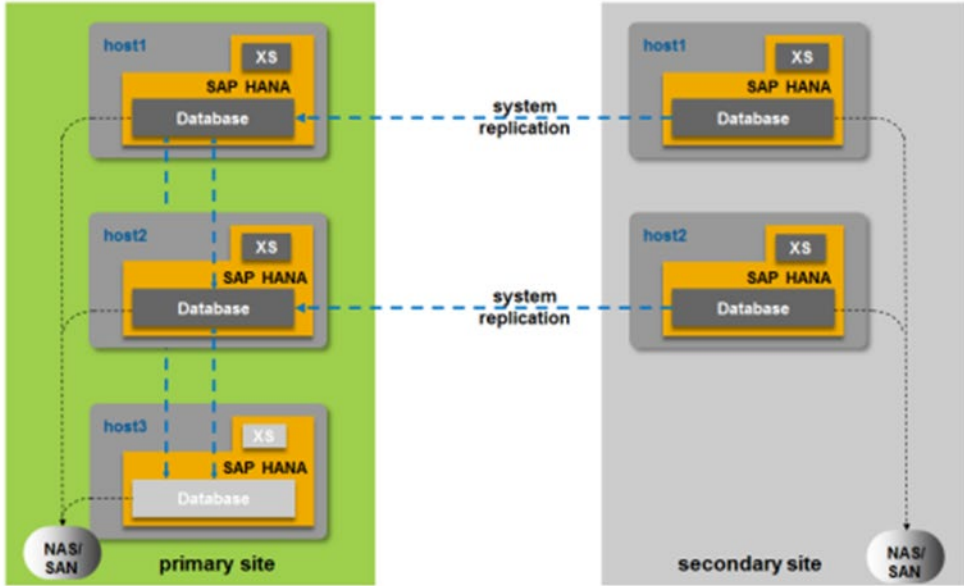
Claim 1	Identification
<p>1[pre]. A data redundancy system, comprising:</p>	<p>To the extent the preamble is limiting, SAP HANA includes a data redundancy system. For example, <i>see</i>:</p> <div data-bbox="611 402 1871 954" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>SAP HANA System Replication</p> <p>SAP HANA system replication is a mechanism for ensuring the high availability of your SAP HANA system.</p> <p>Through the continuous replication of data from a primary to a secondary system, including in-memory loading, system replication facilitates rapid failover in the event of a disaster. Productive operations can be resumed with minimal downtime.</p> <p>The following administration activities are possible using the SAP HANA cockpit, using the SAP HANA studio, or using hdbnsutil on the command line:</p> <ul style="list-style-type: none"> • Performing the initial set-up, that is enabling system replication and establishing the connection between two identical systems • Monitoring the status of system replication to ensure that both systems are in sync • Triggering takeover by the secondary system in the event of a disaster and fallback once the original system is available again • Disabling system replication </div> <p>Source: https://help.sap.com/docs/SAP_HANA_PLATFORM/6b94445c94ae495c83a19646e7c3fd56/676844172c2442f0bf6c8b080db05ae7.html</p>

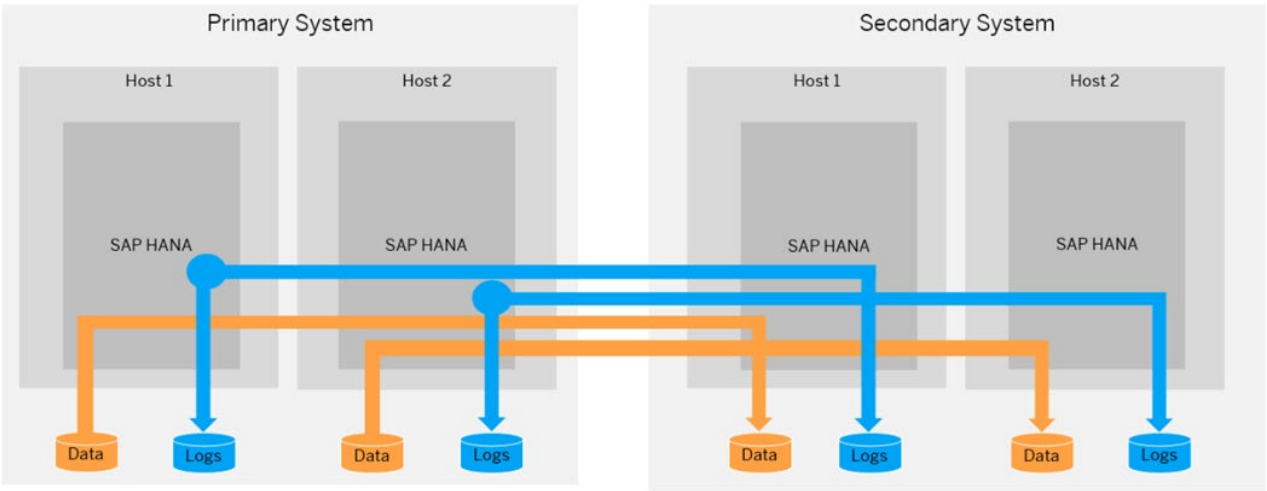
Claim 1	Identification
	<div data-bbox="611 266 1507 423"> <h3>7.2 SAP HANA Multitarget System Replication</h3> <p>In a multitarget system replication, the primary system can replicate data changes to more than one secondary system.</p> </div> <div data-bbox="611 431 1507 1292"> <p>Primary system A in data center 1 replicates data changes to secondary system B in the same data center. Primary system A also replicates data changes to secondary system C in data center 2. Secondary system C is a source system for a further secondary system D located in the same data center with system C.</p>  <pre> graph LR subgraph DC1 [Data Center 1] A[Primary SAP HANA] -- SYNC --> B[Secondary SAP HANA] end subgraph DC2 [Data Center 2] C[Secondary SAP HANA] -- SYNC --> D[Secondary SAP HANA] end A -- ASYNC --> C </pre> </div> <p>Source: SAP HANA System Replication Guide at 143 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>

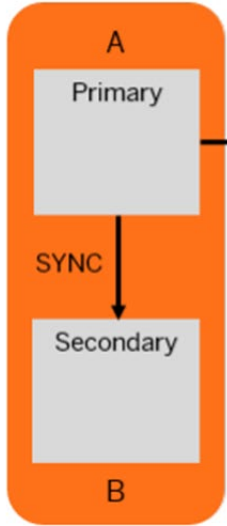
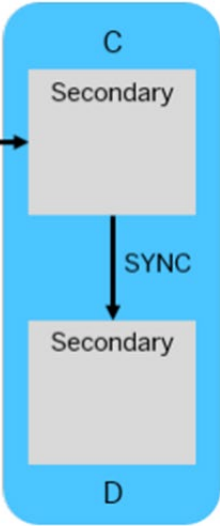

Claim 1	Identification
	<div data-bbox="611 266 1833 553" style="border: 1px solid black; padding: 10px;"> <p>System replication is available in every SAP HANA installation offering an inherent disaster recovery support.</p> <p>System replication is set up so that a secondary system is configured as an exact copy of the active primary system, with the same number of active hosts in each system. The number of standby hosts need not be identical. With multitier system replication you can have a third system attached to the first secondary making it a replication chain of three systems. Each service instance of the primary SAP HANA system communicates with a counterpart in the secondary system. With multitarget system replication the primary system can replicate data changes to more than one secondary system.</p> </div> <p>Source: SAP HANA Administration Guide for SAP HANA Platform at 734 (available at https://help.sap.com/doc/eb75509ab0fd1014a2c6ba9b6d252832/2.0.07/en-US/SAP_HANA_Administration_Guide_en.pdf).</p> <div data-bbox="611 699 1879 1333" style="border: 1px solid black; padding: 10px;"> <p>System replication is SAP's recommended configuration for addressing SAP HANA outage reduction due to planned maintenance, faults, and disasters. It supports a recovery point objective (RPO) of 0 seconds and a recovery time objective (RTO) measured in minutes.</p> <p>System replication is set up so that a secondary system is configured as an exact copy of the active primary system, with the same number of active hosts in each system. The number of standby hosts need not be identical. Furthermore, it requires a reliable link between the primary and secondary systems.</p> <p>Each service of the primary system communicates pairwise with a counterpart in the secondary system. The main difference to the primary system is that the secondary system does not accept requests or queries. The secondary system can accept queries only in an Active/Active (read enabled) configuration. For more information, see <i>SAP HANA System Replication with Active/Active (Read Enabled)</i>.</p> <p>The secondary system can be located near the primary system to serve as a rapid failover solution for planned downtime, or to handle storage corruption or other local faults. Alternatively or additionally, a secondary system can be installed in a remote data center for disaster recovery. The instances in the secondary system operate in live replication mode. In this mode all secondary system services constantly communicate with their primary counterparts, replicate and persist data and logs, and typically load data to memory. The log and data can be compressed before shipping. For more information, see <i>Data and Log Compression</i>.</p> </div>

Claim 1	Identification
	<div data-bbox="611 267 1875 943"><p>The diagram illustrates the architecture of SAP HANA Primary and Secondary Systems. The Primary System consists of Host 1 and Host 2, each containing an SAP HANA instance. The Secondary System also consists of Host 1 and Host 2, each containing an SAP HANA instance. Transactions (blue circles) are processed in the Primary System. Data (orange cylinders) and Logs (blue cylinders) are shipped from the Primary System to the Secondary System. The legend indicates: Transaction (blue circle), Data Shipping (orange arrow), and Log Shipping (blue arrow).</p></div> <p>Source: https://help.sap.com/docs/SAP_HANA_PLATFORM/4e9b18c116aa42fc84c7dbfd02111aba/fb06367a182945eb9048f2b0fb788325.html.</p>

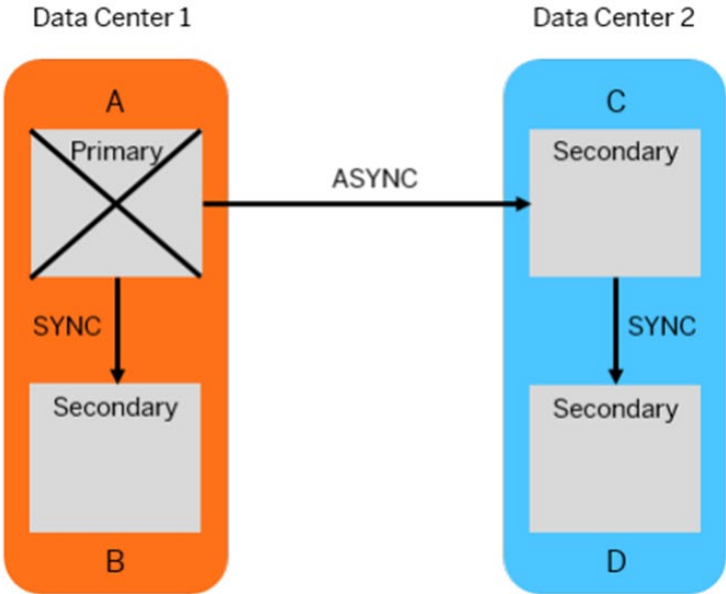
Claim 1	Identification
<p>1[a]. a primary storage facility for storing a primary copy of data, the primary storage facility including;</p>	<p>SAP HANA includes a primary storage facility for storing a primary copy of data. For example, see:</p>  <p>The diagram illustrates the SAP HANA network architecture across two sites: a primary site (left, green background) and a secondary site (right, grey background). Each site contains three hosts (host1, host2, host3) with SAP HANA components (XS, SAP HANA, Database) and a NAS/SAN storage unit. The Client zone (top) includes a user icon, browser/mobile app, SAP HANA studio, DB clients, and an HTTP load balancer. The Internal zone (middle) shows system replication between the primary and secondary sites. The Storage zone (bottom) shows the NAS/SAN storage. A legend at the bottom defines the zones: Client zone: Network for SAP application servers, HTTP and SQL clients; Internal zone: Internode and System Replication Network; Storage zone: Enterprise Storage Network and Backup Network.</p> <p>Source: SAP HANA Network Requirements Whitepaper at 5 (available at https://blogs.sap.com/wp-content/uploads/2015/02/SAP_HANA_Network_Requirements_whitepaper_v1-1.pdf).</p>

Claim 1	Identification
	<p>System Replication Network</p> <p>In SAP HANA system replication, each SAP HANA instance communicates on the service level with a corresponding peer in the secondary system to persist the same data and logs as on the primary system. The services in the secondary system operate in live replication mode: that is, all secondary system services communicate constantly with their primary counterparts, replicating and persisting data and logs and typically preloading data into memory.</p>  <p>The diagram illustrates a system replication network between a primary site (green background) and a secondary site (grey background). The primary site contains three hosts: host1, host2, and host3. Each host has an XS component, a SAP HANA component, and a Database component. The secondary site contains two hosts: host1 and host2, each with an XS component, a SAP HANA component, and a Database component. Dashed blue arrows labeled 'system replication' connect the Database components of corresponding hosts between the primary and secondary sites. Dotted lines connect each host's components to a central 'NAS/SAN' storage unit at the bottom of each site. The caption below the diagram reads 'SAP HANA system replication³ network connection'.</p> <p><i>SAP HANA system replication³ network connection</i></p> <p>Source: SAP HANA Network Requirements Whitepaper at 11 (available at https://blogs.sap.com/wp-content/uploads/2015/02/SAP_HANA_Network_Requirements_whitepaper_v1-1.pdf).</p>

Claim 1	Identification
	 <p>The diagram illustrates the architecture of SAP HANA Primary and Secondary Systems. Each system consists of two hosts (Host 1 and Host 2), each running SAP HANA. Data and logs are shipped from the Primary System to the Secondary System. A legend indicates that blue circles represent Transactions, orange arrows represent Data Shipping, and blue arrows represent Log Shipping. The Primary System's Host 1 and Host 2 each have a Data and Logs component. The Secondary System's Host 1 and Host 2 also have Data and Logs components. Blue arrows (Log Shipping) connect the Primary System's Host 1 and Host 2 to the Secondary System's Host 1 and Host 2. Orange arrows (Data Shipping) connect the Primary System's Host 1 and Host 2 to the Secondary System's Host 1 and Host 2.</p> <p>Legend</p> <ul style="list-style-type: none"> Transaction Data Shipping Log Shipping <p>Source: https://help.sap.com/docs/SAP_HANA_PLATFORM/4e9b18c116aa42fc84c7dbfd02111aba/fb06367a182945eb9048f2b0fb788325.html.</p>
<p>1[b]. a first redundancy appliance operable in a role for receiving a sequence of write requests and for storing data for the sequence of write requests in storage associated with the primary storage facility; and</p>	<p>In SAP HANA, the primary storage facility includes a first redundancy appliance operable in a role for receiving a sequence of write requests and for storing data for the sequence of write requests in storage associated with the primary storage facility. For example, <i>see</i>:</p> <p>Asynchronous (mode=async): The primary system sends redo log buffers to the secondary system asynchronously. The primary system commits a transaction when it has been written to the log file of the primary system and sent to the secondary system through the network. It does not wait for confirmation from the secondary system. This option provides better performance because it is not necessary to wait for log I/O on the secondary system. Database consistency across all services on the secondary system is guaranteed. However, it is more vulnerable to data loss. Data changes may be lost on takeover.</p> <p>Source: https://help.sap.com/docs/SAP_HANA_PLATFORM/6b94445c94ae495c83a19646e7c3fd56/5401f498b2c84fb5b3bcdcbda948d991.html?version=2.0.00.</p>

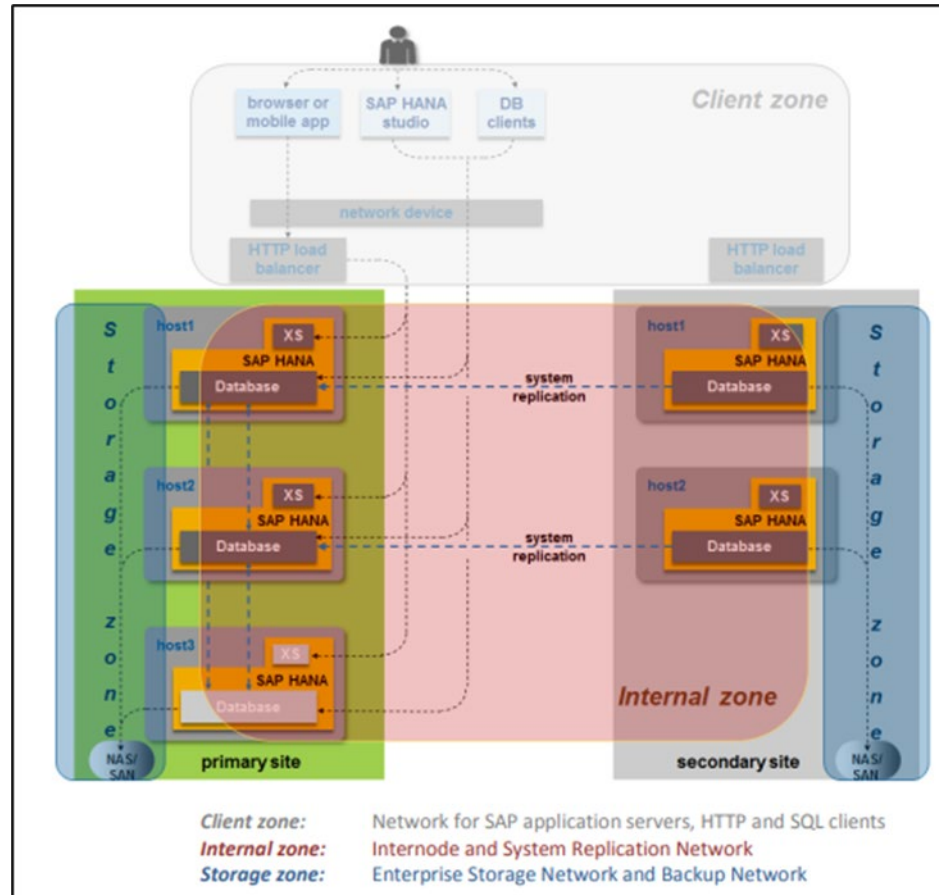
Claim 1	Identification
	<div data-bbox="615 269 1507 375" style="border: 1px solid black; padding: 5px;"> <p>Continuous redo log shipping Every committing write transaction on the primary system generates redo log buffers, which are continuously sent to the secondary system.</p> </div> <p>Source: SAP HANA System Replication Guide at 16 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p> <p>To explain these concepts we are using the setup described in <i>Multitarget System Replication</i>. In this setup, primary system A replicates data changes to secondary system B located in the same data center. Primary system A also replicates data changes to the secondary system C located in another data center. Secondary system C is a source system for a further secondary system D located in the same data center with system C. For a quick overview, use the graphic below:</p> <div data-bbox="638 695 1346 1273" style="text-align: center;"> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Data Center 1</p>  </div> <div style="text-align: center;"> <p>Data Center 2</p>  </div> </div> <div style="text-align: center; margin-top: 10px;"> <p>ASYNC</p>  </div> </div> <p>Source: SAP HANA System Replication Guide at 26 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>

Claim 1	Identification
<p>1[c]. a second redundancy appliance for shadowing the first redundancy appliance wherein the second redundancy appliance assumes the role of the first redundancy appliance;</p>	<p>SAP HANA includes a second redundancy appliance for shadowing the first redundancy appliance wherein the second redundancy appliance assumes the role of the first redundancy appliance. For example, <i>see</i>:</p> <div data-bbox="611 378 1848 534" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>To explain these concepts we are using the setup described in <i>Multitarget System Replication</i>. In this setup, primary system A replicates data changes to secondary system B located in the same data center. Primary system A also replicates data changes to the secondary system C located in another data center. Secondary system C is a source system for a further secondary system D located in the same data center with system C.</p> </div> <p>Source: SAP HANA System Replication Guide at 26 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>

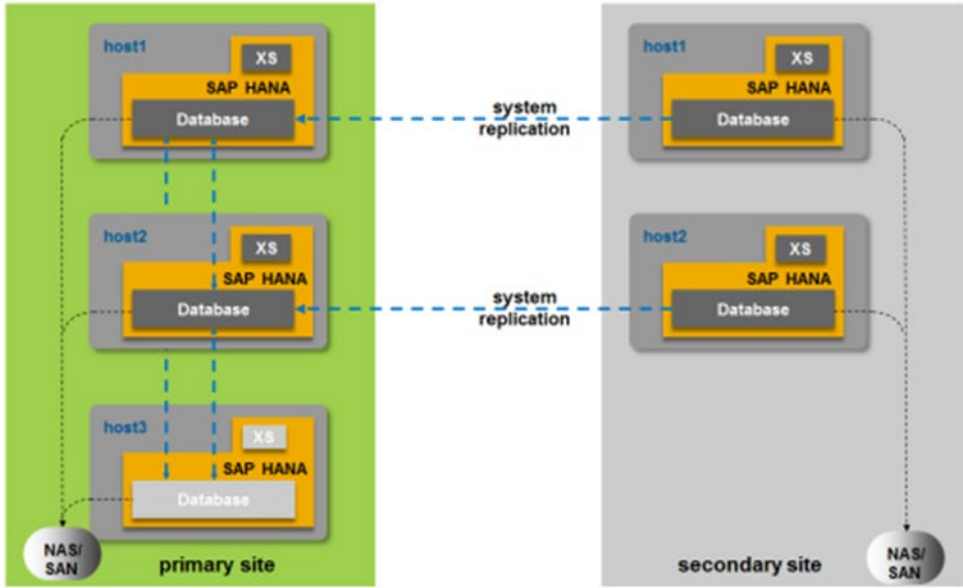
Claim 1	Identification
	<p>Failure on Primary System A</p>  <p>When primary system A fails, proceed as follows:</p> <ol style="list-style-type: none"> 1. Take over on secondary system B in data center 1. 2. Register secondary system C in data center 2 to the new primary system B in data center 1. Then, register secondary system D in data center 2 to secondary system C. 3. After the failure on the previous primary system A is solved, register it to the new primary system B in data center 1. <p>Source: SAP HANA System Replication Guide at 145 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>
<p>1[d]. a secondary storage facility for storing data that is redundant of the primary</p>	<p>SAP HANA includes a secondary storage facility for storing data that is redundant of the primary copy of the data, the secondary storage facility discrete from the primary storage facility. For example, <i>see</i>:</p>

Claim 1

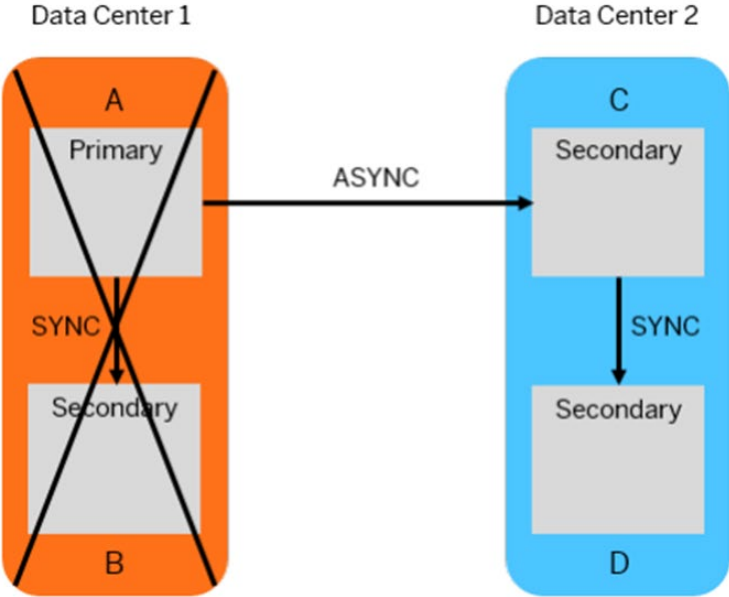
copy of the data, the secondary storage facility discrete from the primary storage facility and including;

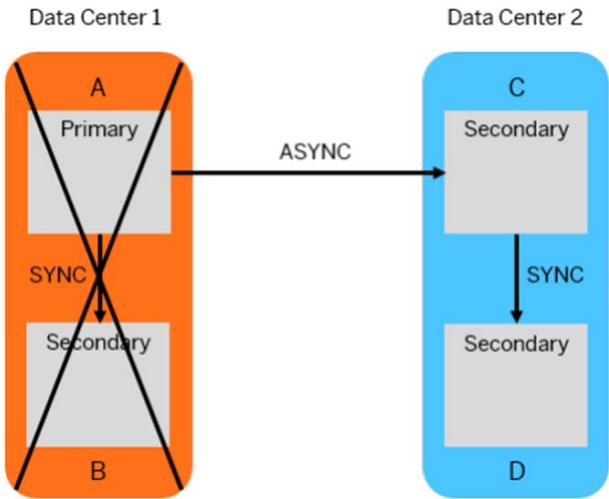
Identification

Source: SAP HANA Network Requirements Whitepaper at 5 (available at https://blogs.sap.com/wp-content/uploads/2015/02/SAP_HANA_Network_Requirements_whitepaper_v1-1.pdf).

Claim 1	Identification
	<p data-bbox="640 280 1003 310">System Replication Network</p> <p data-bbox="640 358 1822 553">In SAP HANA system replication, each SAP HANA instance communicates on the service level with a corresponding peer in the secondary system to persist the same data and logs as on the primary system. The services in the secondary system operate in live replication mode: that is, all secondary system services communicate constantly with their primary counterparts, replicating and persisting data and logs and typically preloading data into memory.</p>  <p data-bbox="940 1206 1539 1235"><i>SAP HANA system replication³ network connection</i></p> <p data-bbox="609 1260 1764 1365">Source: SAP HANA Network Requirements Whitepaper at 11 (available at https://blogs.sap.com/wp-content/uploads/2015/02/SAP_HANA_Network_Requirements_whitepaper_v1-1.pdf).</p>

Claim 1	Identification
	<div data-bbox="611 269 1871 480" style="border: 1px solid black; padding: 5px;"> <p>The secondary system can be located near the primary system to serve as a rapid failover solution for planned downtime, or to handle storage corruption or other local faults. Alternatively or additionally, a secondary system can be installed in a remote data center for disaster recovery. The instances in the secondary system operate in live replication mode. In this mode all secondary system services constantly communicate with their primary counterparts, replicate and persist data and logs, and typically load data to memory. The log and data can be compressed before shipping. For more information, see <i>Data and Log Compression</i>.</p> </div> <p>Source: https://help.sap.com/docs/SAP_HANA_PLATFORM/4e9b18c116aa42fc84c7dbfd02111aba/fb06367a182945eb9048f2b0fb788325.html.</p>
<p>1[e]. a third redundancy appliance operable in a role for storing redundant data for the sequence of write requests in storage associated with the secondary facility; and</p>	<p>SAP HANA includes a third redundancy appliance operable in a role for storing redundant data for the sequence of write requests in storage associated with the secondary facility. For example, <i>see</i>:</p> <div data-bbox="611 667 1881 829" style="border: 1px solid black; padding: 5px;"> <p>Asynchronous (mode=async): The primary system sends redo log buffers to the secondary system asynchronously. The primary system commits a transaction when it has been written to the log file of the primary system and sent to the secondary system through the network. It does not wait for confirmation from the secondary system. This option provides better performance because it is not necessary to wait for log I/O on the secondary system. Database consistency across all services on the secondary system is guaranteed. However, it is more vulnerable to data loss. Data changes may be lost on takeover.</p> </div> <p>Source: https://help.sap.com/docs/SAP_HANA_PLATFORM/6b94445c94ae495c83a19646e7c3fd56/5401f498b2c84fb5b3bcdcbda948d991.html?version=2.0.00.</p>

Claim 1	Identification
	<p data-bbox="632 282 947 310">Failure of Data Center 1</p>  <p data-bbox="632 1036 1199 1060">When all the systems in data center 1 fail, proceed as follows:</p> <ol data-bbox="632 1076 1650 1198" style="list-style-type: none"> 1. Take over on secondary system C in data center 2. 2. After the failure on the previous primary system is solved, register system A to the new primary system C in data center 2. 3. Register secondary system B as tier 3 to system A in data center 1. <p data-bbox="611 1214 1797 1320">Source: SAP HANA System Replication Guide at 146 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>

Claim 1	Identification
	<p>To explain these concepts we are using the setup described in <i>Multitarget System Replication</i>. In this setup, primary system A replicates data changes to secondary system B located in the same data center. Primary system A also replicates data changes to the secondary system C located in another data center. Secondary system C is a source system for a further secondary system D located in the same data center with system C.</p> <p>Source: SAP HANA System Replication Guide at 26 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>
<p>1[f]. a fourth redundancy appliance for shadowing the third redundancy appliance wherein the fourth redundancy appliance assumes the role of the third redundancy appliance in the event of a fault at the third redundancy appliance.</p>	<p>SAP HANA includes a fourth redundancy appliance for shadowing the third redundancy appliance wherein the fourth redundancy appliance assumes the role of the third redundancy appliance in the event of a fault at the third redundancy appliance. For example, <i>see</i>:</p> <p>Failure of Data Center 1</p>  <p>Source: SAP HANA System Replication Guide at 146 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>

Claim 1	Identification				
	<div data-bbox="611 269 1854 488"> <table> <tr> <th>Log Replication Mode</th><th>Description</th></tr> <tr> <td>Synchronous on disk (SYNC)</td><td>The primary system waits with committing the transaction until it gets a reply that the log is persisted in the secondary system. This option guarantees immediate consistency between both systems, at a cost of delaying the transaction by the time for data transmission and persisting in the secondary system.</td></tr> </table> </div> <p data-bbox="611 493 1854 602">Source: SAP HANA System Replication Guide at 13 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p> <div data-bbox="611 638 1854 805"> <p>center 1. As a result, secondary system C in data center 2 will register automatically to the new primary system B in data center, while secondary system D in data center 2 will register automatically to secondary system C. After the failure on the previous primary system A is solved, register it to the new primary system B in data center 1.</p> </div> <p data-bbox="611 810 1854 919">Source: SAP HANA System Replication Guide at 146 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p> <div data-bbox="611 954 1854 1110"> <p>To explain these concepts we are using the setup described in <i>Multitarget System Replication</i>. In this setup, primary system A replicates data changes to secondary system B located in the same data center. Primary system A also replicates data changes to the secondary system C located in another data center. Secondary system C is a source system for a further secondary system D located in the same data center with system C.</p> </div> <p data-bbox="611 1115 1854 1224">Source: SAP HANA System Replication Guide at 26 (available at https://help.sap.com/doc/c81e9406d08046c0a118c8bef71f6bdc/2.0.04/en-US/SAP_HANA_System_Replication_Guide_en.pdf).</p>	Log Replication Mode	Description	Synchronous on disk (SYNC)	The primary system waits with committing the transaction until it gets a reply that the log is persisted in the secondary system. This option guarantees immediate consistency between both systems, at a cost of delaying the transaction by the time for data transmission and persisting in the secondary system.
Log Replication Mode	Description				
Synchronous on disk (SYNC)	The primary system waits with committing the transaction until it gets a reply that the log is persisted in the secondary system. This option guarantees immediate consistency between both systems, at a cost of delaying the transaction by the time for data transmission and persisting in the secondary system.				